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Bureau of Naval Personnel

● RESEARCH REPORT ●

A STUDY OF THE DEGREES OF ILLITERACY-LITERACY REQUIRED IN VARIOUS NAVAL BATTLE STATIONS

Contract Nonr-416(00)

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I. IN BRIEF

1. The present study was conducted to refine and validate a literacy rating scale for determining minimum literacy requirements for the various enlisted station assignments performed by men of pay grades E-2 and E-3, and to provide a methodology for applying the scale to enlisted billets, particularly battle stations, by Navy analysts. The sample was composed of assignments aboard cruisers and battleships, and the methods were an extension of procedures previously employed to investigate literacy requirements in various Navy billets.*
2. A job factor scale for estimating the literacy requirements in terms of the amounts and kinds of Reading, Writing, and Arithmetic required for the accomplishment of lower-level duties was developed and used. This was a modification of the scale used in an earlier study revised so as to give greater precision and more detail concerning the literacy requirements of duties in these specific E-2 and E-3 pay grades.
3. The revised scale was given a one-day field trial. On this basis, some minor revisions were made. The tryout indicated that the revised scale was easier than the initial scale for interviewers to use. It also pointed out the need for the training of interviewers in the use of the scale.

* ONR Contract No. Nonr 416(00), "A Study of the Degrees of Illiteracy-Literacy Required in Various Billets."

4. A condensed form of the revised scale was also constructed which later served successfully as a fingertip reference and an interviewing aid.
5. In applying the revised scale to the 966 billets which had been rated for degrees of literacy requirements under the previous study, the scale values assigned were found highly consistent.
6. The field study phase was aimed at obtaining the minimum literacy requirements for the various Enlisted Station Codes for duties of men of pay grades E-2 and E-3 aboard cruisers and battleships. One thousand four hundred sixty-eight men from seven ships were interviewed. In all, 5,109 shipboard assignments were studied, yielding data pertinent to 551 different duties.
7. The duties on which literacy requirements were estimated do not constitute a random sample of the duties performed by Navy enlisted personnel. The sample is restricted to duties performed by personnel in the E-2 and E-3 pay grades, and cannot be considered as a random sample even within this restricted range of duties.
8. Many duty assignments, although similar in title and code number, are shown as requiring different degrees of literacy. In general, the more literate responsibilities were given to the more senior men assigned to the duty.
9. The realistic minimum literacy requirements for a duty can be interpreted either as an approximate mode (most typical scale value) or the highest scale value given for any observation of that assignment. In either case, almost all duties require some literate skills.

10. There is a need for developing tests to measure the varying levels of literacy possessed by individuals in terms corresponding to those used in the scale. Such research should be done before the concept of minimum literacy standards can be applied on an individual basis.
11. Each billet afloat requires from an individual various kinds and degrees of skills and knowledges to perform the numerous assignments included within a billet. The appearance of a low literacy rating for a particular assignment should not be interpreted as indicating that illiterates can be used to fill billets, as contrasted with assignments, in the present organization of the Navy afloat. In addition, it should be noted that over and above the duty assignments, both occupational and otherwise, there are also literacy skills required of personnel in the adaptation to shipboard living.

II. INTRODUCTION

In order to implement the Secretary of Defense directives relating to the most effective utilization of manpower, the Navy has been conducting a broad program of occupational analysis. A segment of this program is specifically directed toward the investigation of the literacy requirements of naval enlisted billets, particularly those billets identified with fighting the ship, to determine the number, kind and location of billets permitting subliterate skills.

The first study was designed to develop a method of collecting information regarding minimum literacy requirements, to apply the method to the main occupational duties of enlisted men, and to investigate the feasibility of using qualified enlisted technicians to collect such data.*

The initial study undertook to develop an instrument which could reliably measure the amount of literacy required for the billet holder to perform his duties. An eight-step operational scale to estimate the relative difficulty levels of Reading, Writing, and Arithmetic was produced. The rating scale had gone through several revisions and attained an experimental reliability coefficient of $+0.80$. The scale was applied in interview situations with 966 men of E-2 and E-3 pay grades from various branches of the Navy. Using the scale, ratings were assigned to the Reading, Writing, and Arithmetic requirements for such assignments as reading gauges, driving a truck, or maintaining a gun.

The study resulted in a catalogue of the billets according to increasing levels of difficulty for literate tasks as set forth in the scale.

* ONR Contract No. Nonr 416(00), "A Study of the Degrees of Illiteracy-Literacy Required in Various Billets."

In the present study, the emphasis has been shifted from determining the degree of literacy required of the man performing his particular collection of duties (billet), to obtaining literacy requirements for specific duty assignments.

While the prime objective of this research was to develop a methodology for identifying literacy requirements for various duty assignments, there were three purposes or goals:

- a. To refine an existing rating scale for measuring the degree of skill in Reading, Writing, and Arithmetic required to perform various duties in Navy pay grades E-2 and E-3;
- b. To establish the equivalence of the minimum literacy requirement obtained in the first study to those that would have been obtained with the revised scale; and
- c. To rate the literacy requirements of a sample of Navy duty assignments with emphasis upon the Enlisted Station Codes.

Frame of Reference

It is necessary to recognize that determining the minimum literacy requirements (Reading, Writing, and/or Arithmetic) of a duty is different from determining the intelligence required of an individual to perform that duty. The objective here was to estimate the minimum amounts of literate skills which these duties demanded. No attempt was made in this study to arrive at the intelligence level of personnel, nor to determine what the minimum mental level should be for a Navy recruit. Further, this study was not concerned with determining the literacy requirements of behavior not specifically associated with occupational requirements, although it is recognized that investigation is also needed to determine the literacy requirements necessary to absorb basic shipboard training or follow instructions for daily routine.

Current Practices

By directive from the Secretary of Defense, none of the armed services is required to retain illiterate or subliterate personnel. Currently, the Navy retains only those enlisted personnel who have demonstrated by test that they are literate, or have successfully completed a course of training for subliterates who are presumed to have sufficient ability to become literate. In a few instances, it has been possible to restructure enlisted billets in an effort to utilize whatever skills personnel so trained may possess.

For such reasons as the above, minimum literacy requirements must be studied according to duty assignments rather than in terms of individuals. As an interpretation of the information from this study, it can be said that the highest literacy rating of a duty determines the minimum literacy which an individual must possess in order to perform the duty satisfactorily, or to be assigned to a billet which includes that particular duty, unless restructuring of the billet is feasible. The present study presents no method of measuring the literacy level of individuals, although such a scale might well be developed on the basis of the techniques presented here.

III. THE REVISED SCALE

The scale for reporting literacy requirements used in the earlier study was an eight-step scale.* Descriptions of the level of Reading, Writing, and Arithmetic skills were provided for each level. While such a scale reflects information about the general literacy requirements of a given duty, more specific information was desired so as to show separately the requisite skills in Reading, Writing, and Arithmetic.

Since there were very few duties rated 1-5 on the scale and many in the 6-7 categories, there was need to expand the latter steps and to reduce the former. While the initial study showed the original scale to be reliable ($r = .80$) and operationally applicable, it was thought that it could be improved by the following changes:

1. Reading, Writing, and Arithmetic, the three factors contributing to the literacy rating, were organized as separate scales.
2. Additional steps were introduced so that each scale would have eight.
3. Steps shown not differentiable through the interview, or those that rarely received a rating, were redesigned.
4. Steps 6 and 7 were expanded so that they would produce a clearer differentiation.
5. Each added scale step, as in the older scale, was defined by describing in terms of activities performed, the skill level to which it refers.

* A copy of this scale is shown in Appendix C.

Scale Revisions*

The Reading Scale was revised primarily to allow for more objective judgments on the part of the interviewers. The Writing Scale was revised so as to include eight scale steps rather than four. This was achieved by introducing Steps 2 and 3 to resemble tasks required in those steps of the Reading Scale. Steps 4 and 5 in the new scale correspond to Step 6 in the former scale. Step 6 is now the counterpart of former Step 7. The former Step 8 was split into two levels of difficulty and those became Steps 7 and 8.

The Arithmetic Scale was also revised so as to include eight steps, whereas the former scale had only four steps. The order of development of arithmetic skills varies from school system to school system and, from time to time, within the same system. Arrangement of the scale steps in order of difficulty corresponding to tasks in addition, subtraction, multiplication and division was made on the basis of the work of F. L. Clapp, reporting the relative difficulty of primary facts in the fundamental arithmetic processes.**

The scale evolved included two steps of counting (Steps 2 and 3), simple addition and subtraction (Step 4), and then simple multiplication and division (Step 5). Steps 6 and 7 were more complex forms of Steps 4 and 5.

* The revised scale is show in Appendix B.

** Reported in Morton, R. L., Teaching Arithmetic in the Elementary School, Vol. I, Silver-Burdett Co., New York, 1937.

Brooklyn Tryout

In order to test the revised scale, a one-day trial run was scheduled at Brooklyn Navy Yard in June, 1952. The purpose was threefold: (1) to discover any possible administrative difficulties connected with the revision; (2) to determine whether the changes introduced were accomplishing their purpose; and (3) to serve as an opportunity for training in the use of the revised scale.

Arrangements were made for a number of enlisted men with sea experience to be interviewed. Each of the 26 men, mostly awaiting separation, was interviewed concerning his last assignment by each of two interviewers.

Study of the results obtained from the tryout of the new scale showed acceptable interrater reliability. It also afforded the basis for clarification or better wording in a few scale value descriptions.

Comparisons of the paired reports for each man interviewed indicated that the principal sources of disagreement in ratings were: (1) insufficient or different information obtained from the same man, and (2) errors in assigning the wrong scale values to the information. No more than two errors resulted from a misunderstanding of the use of the scale.

Scale errors were due principally to unfamiliarity with the revised scales and "hangover" effects of the old scale. This pointed to the need for specific retraining of the interviewers. The agreement achieved among the raters gave indications that the scale revision was effective. All of the interviewers reported that it had become easier to decide on the appropriate scale step. An analysis of the agreements and disagreements between interviewers provided the material for a retraining conference held on the following day.

Comparison of Old and New Scales

The rating scale employed in the present study was developed from the original scale. As a consequence of reorganization and refinement of scale steps, the initial and revised scales are not directly comparable in a step-for-step fashion.

Table 1 shows the equivalences of the numerical artifacts of the old and new scales as closely as they can be estimated.

TABLE 1

Estimated Equivalences of Steps in the Old
and the New Literacy Factor Scales

<u>Old Scale</u> <u>Step</u>	<u>Corresponding Steps in New Scale</u>		
	<u>Reading</u>	<u>Writing</u>	<u>Arithmetic</u>
1	1	1	1
2			
3			
4	3		
5	4,5		
6	6	5	2
7	7	6	3,4,5
8	8	7,8	6,7,8

This permits an estimate of the ratings based upon the initial scale in terms of the revised scale within the limits of scaling sensitivity. In this instance, initial scale values for Reading, Writing, and Arithmetic may be converted into their respective scale equivalents on the revised form. For example: a reading requirement rated as a "4" according to the initial scale would be rated as a "3" when evaluated according to the Reading dimension of the revised scale. The use of the table permits the Navy Enlisted Classifications and the over-all billet requirements rated in the previous study to be examined in terms of the revised scale values.

Each of the 966 billets previously rated was rerated on the basis of the revised scale. This could not be done as precisely from the summary records available as could be done directly from an interview. In spite of this fact and the lack of linear numerical equivalences of the two scales, there was good agreement between the two series. The correlations between the old and new scale ratings for Reading, Writing, and Arithmetic were $+ .79$, $+ .88$, and $+ .80$, respectively.*

* Computed from the scale values by Product-Moment correlation.

IV. THE FIELD STUDY

Goals and Planning

The purpose of the field study phase was to accumulate data regarding minimal literacy requirements for Enlisted Station duties. This was to be accomplished by direct interrogation of the men assigned to these duties. The minimum literacy requirements for various Navy Enlisted Classifications were obtained for those individuals interviewed, but no systematic coverage of the NEC was planned. Literacy requirements for Navy "living," as contrasted to the duties performed under either the Navy Enlisted Classification Codes or the Enlisted Station Codes, were not part of this study. The assignments to be studied were those ESC duties delegated to men in the E-2 and E-3 pay grades.

The previous study had drawn its sample from all branches of the Navy, proportionally. The present study was to be conducted aboard large combatant ships in the Norfolk-Portsmouth area. It was expected that a larger variety of clearly designated ESC duties would be found aboard the larger ships. If the samples could be drawn from such sources, more detailed information would be available relative to the duties performed.

It was found that samples could be drawn from a number of battleships and cruisers in a relatively short time during their stay in the Norfolk-Portsmouth area.

These two factors together determined the pattern of the field phase of the study, permitting the economical collection of the desired data.

The specific designation of ships to be sampled during the field study was ultimately dependent upon the presence and length of stay of any ship in the port area. A three-week period during November, 1952, was found to be a most opportune time in which to conduct the field phase.

Three RBH interviewers were assigned to the field phase. These men had participated as interviewers in the previous study and had also engaged in the revision of the rating scale, the try-out of the revised scale, and a retraining conference. It was estimated that each interviewer would be able to complete six interviews per hour, providing there were no delays or interruptions.

Preliminaries to Data Gathering

The commanding officer of each of the ships selected for the survey was alerted (BuPers Lt-Pers 1531/J.C.mnh dated 24 Oct., 1952) and informed of the purpose of the study. Each was requested to prepare a list of at least 200 men in the E-2 and E-3 pay grades who were to be interviewed. The list was to be a sample of men selected at random and representative of the divisions aboard ship.

It was requested that the men selected to be interviewed be scheduled so that seven men would report to each interviewer every hour. The men were to report at the rate of approximately one every 10 minutes, and the seventh man would serve as an alternate in the event that some interviewee was not available when scheduled.

A format for preparing the roster schedules was distributed to the ships concerned by ComBatCruLant. A sample of the form used is shown in Appendix D.

Each ship participating in the field phase of the study was requested to provide suitable space for the three interviewers to work simultaneously, also sufficient enlisted personnel to direct the traffic of men reporting for interviews.

Interview Procedure

The previous study indicated that the rapidity and accuracy of interviewing depended upon the order in which the Reading, Writing, and Arithmetic factors were discussed in relation to job requirements. The interviewers felt that the men could recall more readily the Arithmetic requirements of a duty. This led into what had to be written, and then the Reading requirements. Therefore, all interviews were conducted by ascertaining the literacy requirements of Arithmetic, Writing, and Reading in that order, rather than the conventional order of learning which is Reading, Writing, and Arithmetic.

A brief manual was prepared to both train and guide RBH professional interviewers. It is included in Appendix E, with the suggestion that it might form the basis of training for technicians assigned as interviewers to do similar work in this area. Users of the manual are advised to become thoroughly familiar with the specific purposes for which the scale and procedure has been designed.

The proper assignment of scale values to the duties reported by the interviewee is the aim of the interview. The recording of the results, therefore, would have to be simple, uniform, and objective. Accordingly, rating cards were developed which enabled us not only to record the data conveniently, but also to analyze it. A facsimile of the rating card appears in Appendix E, Part 2.

The interview procedures shown in the manual were maintained throughout the study. Some control for uniformity was obtained by having the senior interviewer listen to the interviews of the other team members, in addition to daily group discussion of procedure.

The Interview Aid

During the course of the study, the interviewers became thoroughly familiar with the literacy scale, and as a result, they reported a tendency to make less and less direct use of it during their tryout interviews. Since it is advisable to refer continually to the scale if objectivity and uniformity of ratings are to be kept to a maximum, a condensed scale for fingertip reference was developed. This consisted of examples, taken from the full scale, which the interviewers believed most descriptive of the scale steps. Each interviewer always had a copy of the aid before him while he worked. In only a few instances was it necessary to refer back to the longer form during the interviews. The condensed form of the scale can be employed only by persons already thoroughly familiar with the full scale. The Interviewing Aid is presented in Appendix F.

Interviewing

Each interview was geared to determine the degree of literacy required in the actual performance of duties. Each man was questioned concerning all of his duties and assignments. Emphasis was placed on maximal coverage of all Enlisted Station duties.

Previous experience indicated that a man might be assigned a Navy Enlisted Code and yet be performing duties unrelated to it. Therefore, in order to ensure that only those duties actually performed were rated, the Navy Enlisted Codes appearing on the rosters were used only as leads for questioning by the interviewers.

We recognized that the same duty assignment reported by different men might differ in what tasks are performed and require different levels of literacy. The procedure required that interviewers record the literacy requirement as reported by the man regardless of variability in the requirement as reported by other personnel with respect to the same assignment title.

It was assumed that the accumulation of all obtainable data would lead to maximum objectivity in the analysis. Accordingly, each man interviewed was questioned completely. No assumptions were made regarding the literacy requirements of their duties from either their job title, duty assignment, or code number. In this context, it was important for interviewers to be certain that there were no perservative effects of previously established literacy ratings on duties that might be similar in either title or code number. Emphasis on this point was considered very important. For each interview, the goal was to determine the actual literacy requirements of the duty as performed by the interviewee.

The interviewers always made certain that a reported assigned duty actually had been performed by the interviewee. A literacy rating was not assigned unless a crewman had performed the specific Enlisted Station duty.

V. PROBLEMS RELATED TO THE FIELD STUDY PHASE

Scheduling

Scheduling the field phase of the study aboard the ships was dependent upon the arrival dates, length of stay, and departure dates of the ships in the Norfolk-Portsmouth area. The interviews conducted aboard ships were not permitted to interfere with the normal routine. As a consequence, the number of interviews obtainable was determined by the fortunate presence of battleships and cruisers and the cooperation of Navy personnel involved. In one instance, a ship was ordered to depart while the study was in progress and, consequently, it was possible to interview only three-quarters of the personnel originally scheduled aboard that ship.

No difficulties were encountered resulting from delays in personnel reporting for interviews since the provision for alternate interviewees proved very effective. Ninety-two per cent of the men whose names appeared on the rosters were available for interviews when scheduled.

The Sample

The list of interviewees consisted of samples of the E-2 and E-3 pay grades from the various divisions of the ships included in the study. Some assignments would be expected to occur more frequently than others as a result of the greater demand for the performance of certain duties by E-2 and E-3 pay grades. All personnel in the above pay grades, who could be interviewed in the period of the field study without interfering with ship operations, were included in the samples. Additional investigation is needed to determine whether the samples can be considered random or representative with regard to the duty assignments reported.

In the case of billet holders who had recently arrived from recruit training or service schools, it was observed that frequently these men had not yet actually performed all the duties to which they were assigned. This was especially common aboard two ships which had been undergoing repairs for more than a month. In these instances, it was necessary to determine first, which duties the men had actually performed, and then to evaluate only these assignments.

Verification of Duty Requirements

While it would have been desirable for the interviewers to have personally observed the actual performance of many of the duties, at least four factors prohibited this: (1) Many duties are performed only when the ship is underway; (2) certain Enlisted Station duties occur only during real emergency or drill conditions; (3) security regulations prohibited our interviewers from going into the ships' operating compartments; (4) the time required to make the observations would have appreciably reduced the total number of assignments rated.

The Obtained Sample

Approximately six man-working-days were spent aboard each ship. Interviewing proceeded at the rate of six men per hour per interviewer on the basis of 10 minutes per man. Interviews were held in specially designated areas and environmental conditions were such as to favor privacy, conformity to schedule, and routine adherence to the needs of the study.

A total of 1,468 men in the E-2 and E-3 pay grades was interviewed aboard their respective ships. (Where circumstances were adverse for conducting interviews aboard ship, such as occurred in one instance -- excessive noise accompanying overhaul -- a nearby shore building was utilized.) Table 2 presents the actual numbers of men interviewed.

TABLE 2

Interviews Completed

<u>Ship</u>	<u>Type</u>	<u>Number of Interviews</u>
1. USS Roanoke (CL 145)	Cruiser, Light	246
2. USS Macon (CA 132)	Cruiser, Heavy	247
3. USS Albany (CA 123)	Cruiser, Heavy	205
4. USS Newport News (CA 148)	Cruiser, Heavy	146
5. USS Pittsburgh (CA 72)	Cruiser, Heavy	202
6. USS New Jersey (BB 72)	Battleship	201
7. USS Wisconsin (BB 64)	Battleship	221

N = 1,468

TABLE 3

Occupational Group Classification
of Billot Holders Interviewed

	<u>No.</u>		<u>No.</u>
General Duty and	FA 154	Engineering	BTFN 7
Potential Strikers	FN 132	and Hull	DCFN 1
	SA 361		EMFN 2
	SN 682		ENFN 1
			FPFA 1
Deck	BMSN 1		FPFN 2
	QMSN 2		ICFN 5
	RDSA 4		MEFN 3
	RDSN 18		MMFA 1
			MMFN 3
Administrative	CSSN 9		MMLFA 1
and Clerical	DKSN 2		MRFN 1
	PNSN 7		
	RMSN 10	Stewards	TA 5
	SKSA 3		TN 10
	SKSN 4		
	TESN 10	Others, too few	
	YNSN 8	proportionally	
		to represent spe-	
		cific occupation-	
		al groups.	18
			<hr/>
		Total Number	1,468

A literacy rating was established for each assignment reported during the interviews. In substance, these included 1,076 occupational assignments, 3,660 Enlisted Station duty assignments, and 373 assignments which the interviewers could not readily classify in either of the main categories. Table 4 summarizes the number of assignments for which literacy ratings were obtained.

TABLE 4
Types of Assignments Rated

	Frequency of Assignments Rated	Number of Different Assignments Rated
Navy Enlisted Classifications	1,076	122
Enlisted Station Code	3,660	355
Duties Not Yet Classified	373	74
Total	5,109	551

Of the classifiable assignments, 122 different occupational assignments were identified and rated, while 355 different Enlisted Station assignments were identified and rated.

The Navy Enlisted Classification Code numbers were assigned by comparing the man's report of his job description with the "Manual of Enlisted Navy Job Classifications," NavPers 15105 (Revised), November, 1949. The Enlisted Station Code* was supplied by BuPers. Appropriate code numbers were assigned by the interviewers on the basis of the man's report of his job.

* The Enlisted Station Code designations are experimental and not operational. Current additional research is further developing these classifications.

VI. RESULTS

The results, estimates of literacy required for each duty assignment, are presented in the Summary Tables, Appendix A.

The Summary Tables report 551 different duty assignments: 355 duty assignments in Section 1 (Enlisted Station Code), 122 occupational assignments in Section 2 (Navy Enlisted Classifications), and 74 assignments in Section 3 that could not yet be classified in either code system. The tables report the title of the assignment, its code identification, the number of times it was reported by the men, the highest literacy requirement noted for Reading, Writing, and Arithmetic, the frequency of occurrence at each scale value, and a modified modal value for each literacy requirement.

These data were obtained from interviews with a total of 1,468 men in the pay grades E-2 and E-3 who reported a total of 5,109 assignments. The assignments reported included both the primary occupational assignment (Navy Enlisted Classification), and the duties included in the Enlisted Station Codes. While the study was primarily intended to obtain literacy information relative to Enlisted Station assignments, similar information was obtained for occupational assignments.

Interpretation of Summary Tables

Five hundred fifty-one different assignments were identified and rated, each assignment being rated, on the average, 9.3 times. Table 5 shows the number of times various titles were observed and rated. Thus, 178 titles were found only once, 78 occurred two times, while 10 were found between 40 and 49 times.

TABLE 5

Frequency of Occurrence and Rating of Various Duty Titles

Frequency of Occurrence	Number of Titles			
	NEC	ESC	Not Yet Classified	Total
50 & over	5	13	1	19
40 - 49	-	9	1	10
30 - 39	4	12	1	17
20 - 29	1	14	2	17
15 - 19	10	21	5	36
10 - 14	10	17	2	29
9	2	9	-	11
8	3	5	2	10
7	6	11	1	18
6	4	18	3	25
5	2	18	-	20
4	3	33	1	37
3	8	34	4	46
2	25	44	9	78
1	39	97	42	178
Total	122	355	74	551

For example: the title "Bridge Messenger 10 00 16" (Section 2, Appendix A) was found 44 times. The highest literacy ratings observed were "6," "7" and "6," respectively, for Reading Writing, and Arithmetic. It may be noted that the minimum literacy required for Reading was reported 16 times as a "1," once as a "4," 13 times as a "5," and 14 times as a "6." The literacy demands varied from man to man, or rather, from one to another occurrence of the duty. An average of these ratings would give a misleading picture of literacy demands. Hence, two estimates of literacy requirements have been made:

1. The highest literacy rating observed independent of frequency, in this case, "6."
2. A modified mode* value reflecting the estimates of the research team as to the most likely literacy requirements of the duty. In the case of Reading for Bridge Messenger, two such values are shown, "1" and "6." Sixteen of the 44 occurrences showed a literacy requirement of "1." Apparently, this duty in many cases requires no Reading at all, but in other cases requires a level of "5" or "6," with 13 and 14 such occurrences respectively. Hence, a second value of "6."

* This is not a computed mode in a statistical sense, but is a modal value reflecting the judgment of the interviewers as well. It is based on the frequency distribution of ratings for each duty title. Certain basic rules were used to govern the judgments made independently for Reading, Writing, and Arithmetic:

1. In unimodal distributions where $N > 4$, the most frequent rating is reported.
2. In case there is no most frequent rating, the highest of the ratings having greatest frequency is reported.
3. When $N \leq 4$, the highest rating is reported.
4. In case of bimodal distributions, two modes were assigned: e.g., "1," "5."

It may be noted, however, that for the Reading Scale, there is an 83% agreement (identical scale values) between the highest scale value and the higher modified mode value.

In view of such evidence, as well as assignment procedures, it is recommended that the highest minimum literacy rating obtained for any duty assignment be considered its minimum literacy requirement. This recommendation is made for the use of all the literacy scales.

Table 6 shows the frequency distribution of highest minimum literacy ratings for Reading, Writing, and Arithmetic for Enlisted Station duty assignments.

TABLE 6
Distribution of Highest Minimum Literacy Ratings
for Enlisted Station Duties
(N=355 Enlisted Station Duties)

<u>Rating</u>	<u>Reading</u>	<u>Writing</u>	<u>Arithmetic</u>
8	44	7	43
7	117	91	27
6	65	34	53
5	19	36	8
4	19	15	7
3	53	29	47
2	-	1	15
1	38	142	155

Such data cannot and must not be considered a random sample of minimum literacy requirements of Enlisted Station duties. The data reflect information about the literacy requirements of Enlisted Station duties of pay grades E-2 and E-3 aboard the types of ships included in this study.

It is interesting to note that, of the 355 Enlisted Station duty assignments, 143 (40%) and 155 (44%), respectively, require no Writing and no Arithmetic. The Reading requirements are greater; 64% require a skill level of "6" or higher. This, by no means, indicates low literacy requirements for Navy billets. It does show that there are duty assignments on the types of ships covered in the study which are related to emergency, or battle conditions, that of themselves do not have high literacy requirements.

It was observed that within a given duty, the more senior men reported the greater literacy requirements. If, for example, a label had to be read, boxes counted, or written record made, the more senior man in a group assigned to that duty had the responsibility.

To obtain the minimum literacy requirements for a billet it would be necessary to identify all of the duties comprising that billet, and the literacy requirements of each of the duties. The duty patterns comprising various billets are not entirely standardized even by ship type. Since this problem was not included in this project, no study of duty patterns was made. The data as obtained could be analyzed from this point of view.

It was observed that a man is likely to have five or six different assignments at any one time which he must be prepared to perform depending upon the activity of the ship. During a three or four year period, he is likely to have 15, or even 20, different assignments. The manner in which a man is assigned his various duties may not be pattern-like, but, nevertheless, the assignments, as they occur, can be considered as forming a pattern for that individual. The results of a pattern analysis of the literacy requirements for a billet would be subject to the same sampling limitations as in this study, but could be very useful in exploring the problem.

The correlations of the ratings for literacy requirements in Reading, Writing, and Arithmetic for the 355 Enlisted Station Codes are as follows:

$$r_{RW} = .55$$

$$r_{RA} = .45$$

$$r_{WA} = .61$$

Examination of the Summary Tables, Appendix A, shows considerable variability among the literacy ratings assigned for a duty. Two forms, or kinds of variation, may be observed: variation about some single, central rating, and variation indicating two levels of literacy for the same duty title.

This variation can be understood in terms of such factors as:

- (1) man-to-man differences in how the tasks are performed;
- (2) differences in the tasks which constitute assignments bearing the same title and code number from ship to ship;
- (3) variation in data collection despite the precautions incorporated in the method for obtaining information.

VII. RECOMMENDATIONS

On the basis of the study, certain suggestions or recommendations may well be made.

1. The literacy scale should be incorporated as part of the regular job analysis procedure.
 - a. It should be used in the analysis of those duties and assignments in which it is thought that the literacy requirements are minimal.
 - b. The enlisted personnel trained in job analysis can use the literacy scales successfully. Such use requires that the personnel be trained in the use of the scale and that adequate supervision be given to any such utilization.
 - c. The scale has been designed to identify minimum literacy requirements at the lower levels of literacy. To investigate the problem at higher levels would require the construction of an appropriate scale.
2. The minimum literacy requirements of all Navy duties for the lower pay grades, E-2 and E-3, should be identified.
 - a. In addition to the coverage afforded by this report and the previous report, there still exists the need for a systematic collection of literacy requirement information for primary occupational duties (Navy Enlisted Classifications), for duties under the Watch, Quarter and Station Bill of the ship (Enlisted Station Code), for general adaptation to Navy living and duty, and in training for the minimal level assignments.

3. The minimum literacy patterns of billets (all the duties performed by a given individual) should be studied. This would be a necessary step in determining how many and where subliterate men may be utilized in the event of total mobilization.
4. To be meaningful, minimum literacy patterns of billets should be studied by ship type. It may well be that similar titles and assignments aboard smaller fighting ships and auxiliary vessels might require different and higher literacy skills in terms of the versatility demanded from each man as the duties are combined. Data from the present study may be used as a starting point for such a study.
5. A pattern analysis of billets might be aimed at trying to increase the number of billets which contain groups of duties which are more homogeneous with respect to literacy requirements.
6. It is noted in this study that certain assignments bear identical titles and code numbers and yet differ considerably in their literacy requirements. For example: there is a need to separate the title "Leading Seamen" from the more inclusive title "Deck Hand." Deck Sentry (90 01 06), in this study, was found to be an inclusive title for 14 separate duties. In other words, 14 duty assignments requiring varying degrees of literacy are all included under the same code number. A careful review of existing classifications and duty codes in the light of literacy requirements is suggested.
7. Existing enlisted classification titles and codes should be reviewed for the purpose of identifying the apparently dissimilar duties which are presently undifferentiable in terms of the existing catalogue.

8. To make use of information regarding minimum literacy requirements of duties, it will be necessary to develop tests or other instruments to yield measures of the literacy levels of personnel in terms parallel to those of the scales used in this study. The basic starting material for such measuring instruments may be obtained from the scale itself and from the interviewers' reports of the duty elements which determined the literacy ratings of the duties.
9. It would be well if the other military services would make similar studies of minimum literacy requirements of duties and assignments at the lower pay levels. Such comparable data would be of aid in dealing, in an objective fashion, with problems of manpower allocations.
10. Although not within the present framework, the GCT score and level of educational attainment was obtained for each man. An analysis of the relationships existing between these characteristics and duty assignments could aid in the establishing of minimum requirements, and have bearing on identification of duty prerequisites.

APPENDIX A

SUMMARY TABLES

Literacy Required for Shipboard Assignments

Section 1: Navy Enlisted Classifications

Section 2: Enlisted Station Codes

Section 3: Assignments for Which Codes Are Not
Yet Available

Section 1: Navy Enlisted Classifications

SUMMARY TABLE

Literacy Required for Shipboard Assignments

Item	Duty Assignment	Code	N	Highest Literacy Required	Frequency of Occurrence at Each Scale Rating *																								Modified Mode Values												
					Reading												Writing															Arithmetic									
					R	W	A	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	R	W	A							
1	General Duty Hand	0009	116	8 7 6	63	9	18	24	1	1	84	1	2	12	16	1	2	12	16	1	1	2						1,5	1,5	1											
2	P. S. Clerical & Admin. Rating	0015	1	1 1 1	1							1															1	1	1	1											
3	Engineering Hand	0042	6	6 5 7	1	3			2			4	1	1												1	3,6	1	1	1											
4	Boatswain's Mate, Shipboard Basic	0109	64	8 7 8	8	3	11	3	15	14	10	9	2	8	23	10	12	20	1	15	1	8	11	7	1	7	5	3,7													
5	Boatswain's Mate Canvas, Basic	0149	2	6 5 4					1	1					1	1										6	5	5	4												
6	Quartermaster-Signalman, Basic	0209	8	8 8 8								2	6	1											1	8	6	3													
7	Quartermaster, Watch Stander	0213	6	8 7 7								1	5												5		8	7	7												
8	Quartermaster, Basic	0219	15	8 7 8								2	3	10										2	1	4	7	8	7	2											
9	Signal Watch Stander	0232	1	8 6 3								1												1			8	6	3												
10	Signalman, Basic	0239	16	8 7 6								7	3	6										10	6	5	1	9	8	7	3										
11	Radarman	0300-0399	18	8 7 7								4												3	12	3	1		8	6	7										
12	Radar Operator-Plotter	0302	9	8 8 8	1				1	2	1	1												2	3	3	1	2	8	2	8										
13	Radar Operator, Search	0303	12	8 8 8	1																			1	1	8	2	8	6	7											
14	Radarman, Basic	0309	3	8 7 8											1	1	1	1								1	1	8	7	8											
15	Gunner's Mate	0800-0999	94	8 7 8	4	1	10	16	6	15	33	7	29	2	2	9	25	10	14	25	3	39	7	1	14	2	1	4,7	1,5	1,3											
16	Gunner's Mate, Basic	0809	34	8 7 6	1	2	4	1	8	10	8	4	3	1	11	1	14	10	2	15	2	5				8	5,7	1,3													
17	5"/38 cal., Dual Purpose Mounts	0812	1	8 5 3											1								1				8	5	3												
18	40/20 mm./-50, 30 cal. main guns	0842	7	8 7 6					1	2	1	1	2	1				1	2		3	1	4		2		5,8	7	3,6												
19	3"/50 Rapid fire mounts	0875	1	8 6 6											1										1		8	6	6												
20	Gunner's Mate, Mounts, Basic	0879	8	8 7 3						1	4	2	1	1				1	2	4				6			7	7	3												
21	8"/55 Cal. turret	0912	1	7 4 3														1									7	4	3												
22	Armory Ordnanceman	0952	6	8 7 8					2	1	1	1						4		2				1	1		7	5,7	3,7												
23	Fire Controlmen	1000-1099	2	6 7 7														1	1							1	6	7	1,7												
24	Fire Control Operator, B.	1079	21	8 8 8	4	2	4	1	4	4	2	4	3	4	4	1	4	1	9					7	4	1	4,7	5,7	1,7												
25	Fire Control Technicians	1100-1199	11	8 8 8	1										1			7	1	4					2	1	4	8	7	1,8											
26	Fire Control Repairman, Electronics	1104	1	6 6 6														1							1		6	6	6												
27	Fire Control Repairman, B.	1109	15	8 8 8					3	1	1	10														4	5	3,8	5,7	1,8											
28	Electronic Technicians	1500-1599	5	8 8 8																							8	8	8												
29	Electronics Technician, B.	1599	10	8 8 8											1	1	1	5	3	2							8	8	8	1,8											

* Reported as the highest value

Highest Literacy Required

R Reading

W Writing

A Arithmetic

SUMMARY TABLE

Literacy Required for Shipboard Assignments

Item	Duty Assignment	Code	N	Highest Literacy Required		Frequency of Occurrence at Each Scale Rating *																								Modified Mode Values																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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30	Electronics Technician, Labor, B.	1519	5	8	8	8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														

* Reported as the highest value

Highest Literacy Required

R Reading

W Writing

A Arithmetic

SUMMARY TABLE

Literacy Required for Shipboard Assignments

Item	Duty Assignment		N	Highest Literacy Required		Frequency of Occurrence at Each Scale Rating *																		Modified Node Values								
						Reading									Writing												Arithmetic					
						1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	R	W	A
59	Ship's Cook	3022	4	7	5	7																				7	5	7				
60	Ship's Cook, B.	3029	13	7	5	7																				4,7	1,5	1,7				
61	Butcher, B.	3039	2	4	5	7																				4	5	7				
62	Baker, B.	3049	5	7	6	8																				7	5	5,8				
63	Ship's Serviceman, B.	3104	3	7	7	7																				7	7	7				
64	Cashier and Sales Clerk	3112	3	7	5	7																				7	5	7				
65	Soda Fountain Attendant	3114	3	8	8	7																				2	8	7				
66	Barber	3122	2	7	6	3																				7	6	3				
67	Barber, B.	3129	4	5	5	4																				5	5	1,4				
68	Tailor	3142	2	8	5	8																				8	5	2,8				
69	Tailor, B.	3149	3	6	6	4																				6	6	4				
70	Laundryman	3152	1	6	6	3																				6	6	3				
71	Dry Cleaner, Presser	3153	1	5	5	4																				5	5	4				
72	Laundryman, B.	3159	14	7	5	3																				5	5	2				
73	Cobbler, B.	3169	2	8	5	3																				8	5	3				
74	Physical Train. Instr., Gen.	3401	1	7	5	7																				7	5	7				
75	Printer	3502	2	7	6	7																				7	6	7				
76	Lithographer	3602	1	8	6	7																				8	6	7				
77	Musician, Instrumentalist	3832	2	4	5	7																				4	5	1,7				
78	Photographer's Mate, B.	3909	1	8	8	8																				8	8	8				
79	Stand. Photographic Equipment	3917	1	8	8	8																				8	8	8				
80	Machinist's Mate, B.	4239	70	8	7	8																				8,6	8	1,7				
81	Auxiliary Mechanic, B.	4249	17	8	7	8																				8,7	3,7	1,7				
82	Steam Heat Maint. Mechanic, B.	4252	2	7	6	7																				7	6	2,7				
83	Steam Engr., Ship's Service, Gen.	4253	1	6	7	2																				5	7	2				
84	Engineer, B.	4309	32	8	7	8																				8,7	5,7	1,7				
85	Diesel Engineer, B.	4319	11	8	7	7																				4,8	5,7	1,6				
86	Machinist, B.	4409	2	8	7	8																				8	7	8				
87	Milling Machine Oper.	4432	1	8	7	7																				8	7	7				

* Reported as the highest value

Highest Literacy Required

R Reading

W Writing

A Arithmetic

Literacy Required for Shipboard Assignments

[illegible]

* Reported as the highest value

Highest Literacy Required
R Reading
W Writing
A Arithmetic

SUMMARY TABLE

Literacy Required for Shipboard Assignments

Item	Duty Assignment		N	Highest Literacy Required	Frequency of Occurrence at Each Scale Rating *																		Modified Mode Values								
					Reading									Writing												Arithmetic					
					R	W	A	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	R	W	A					
117	Steward, General, Basic	9009	17	7	6	7	2				8	5	1	1	8								3	2	11		1	5	1,5	3	
118	Steward, Wardroom	9022	2	5	5	7					1	1			1										1		1	5	5	7	
119	Expert Lookout	9586	13	3	1	6	1	1	1	1					13								2	7		4		2	1	2,6	
120	Motion-Picture Electrician	9702	1	8	7	8									1												1	8	7	8	
121	Motion-Picture Proj. Oper., 16 mm.	9714	1	8	7	3									1										1			8	7	3	
122	Librarian	9745	1	8	5	4									1													8	5	4	

* Reported as the highest value

Highest Literacy Required

R Reading

W Writing

A Arithmetic

Section 2: Enlisted Station Codes

SUMMARY TABLE

Literacy Required for Shipboard Assignments

Item	Duty Assignment		N	Highest Literacy Required		Frequency of Occurrence at Each Scale Rating *																												Modified Mode Values		
						Heading										Writing										Arithmetic										
						1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8							
1	23K Storeroom Keeper	00 00 01	1	8	7	7																											2	7	7	
2	Laundryman	00 00 04	1	5	5	2																											5	5	2	
3	Battle Messing Cook	00 00 04	3	7	5	5																											7	5	5	
4	Battle Messing Butcher	00 00 04	1	1	1	1																											1	1	1	
5	Battle Messing Baker	00 00 10	3	7	7	7																											7	7	7	
6	Police Patrol M/A	00 01 03	3	8	7	3																											2	7	3	
7	Hospital Corpsman	05 02 03	6	8	7	7																											7	7	3	
8	Stretcher Bearer	05 02 04	3	5	1	1	2																										5	1	1	
9	Quartermaster of the Watch	10 00 03	11	8	8	7																											8	7	7	
10	Asst. Quartermaster of the Watch	10 00 03	4	8	7	7																											8	7	7	
11	Boatsman's Mate of the Watch	10 00 04	11	7	7	6																											7	6	2	
12	Helmsman	10 00 05	63	7	6	6	1																										3	1	1	
13	Lee Helmsman	10 00 06	51	6	6	6																											4	4	1	
14	Alter Steering Helmsman	10 00 07	3	4	4	1																											5	5	1	
15	Foremast Bearing Taker	10 00 11	5	5	5	1																											3	1	1	
16	Rearmast Recorder	10 00 12	1	3	1	1																											3	1	1	
17	Battle Signal Recorder	10 00 14	2	8	6	3																											8	6	3	
18	Bridge Messenger	10 00 16	44	6	7	6	16																										1,6	1,6	1	
19	Bridge Talker	10 00 17	46	7	6	6	28																										1,6	1,6	1	
20	Flag Bridge Talker	10 01 03	1	1	1	1																											1	1	1	
21	Surface Lookout	10 02 01	35	4	4	6	23	1	9	3																							1,3	1	1,3,6	
22	Mr. Lookout	10 02 02	59	5	5	6	37	14	2	1																							1,3	1	1,3,6	
23	Horizon Lookout	10 02 03	19	3	1	6	13	8																									1,3	1	2,6	
24	Far Lookout	10 02 04	9	4	4	6	8																										1	1	1,6	
25	Ship's Lookout	10 02 05	17	6	1	6	5	1	10																								1,3	1	1,6	
26	Hoisting Line Handler	10 06 02	4	1	1	1	4																										1	1	1	
27	Anchor Detail Crewman	10 06 03	1	1	1	1																											1	1	1	
28	Leadman	10 06 05	1	3	1	3																											3	1	3	
29	Hand-Steering Man	10 06 06	1	1	1	1																											1	1	1	

* Reported as the highest value

Highest Literacy Required

R Reading

W Writing

A Arithmetic

SUMMARY TABLE

Literacy Required for Shipboard Assignments

Item	Duty Assignment		N	Highest Literacy Required		Frequency of Occurrence at Each Scale Rating *																								Modified Node Values		
						Reading								Writing								Arithmetic										
Code	Title	R	W	A	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	R	W	A	
30	Devil Operator	15 00 04	1	1	1	1																										
31	Runners Office Messenger	20 00 07	5	6	6	1																										
32	Safety Observer	20 00 08	1	6	1	1																										
33	Loader	20 00 09	1	7	1	1																										
34	Gun Captain, 16"/50	20 00 09	2	8	5	1																										
35	Gun Layer, 16"/50	20 00 09	3	7	3	5																										
36	Pointer, 16"/50	20 00 09	4	7	1	1																										
37	Trainer, 16"/50	20 00 09	2	7	1	1																										
38	Hammerman, 16"/50	20 00 09	4	7	1	1																										
39	Primerman, 16"/50	20 00 09	4	7	1	1																										
40	Powderman, 16"/50	20 00 09	2	7	1	1																										
41	Sightsetter, 16"/50	20 00 09	2	3	1	1																										
42	Powder Hoistman, 16"/50	20 00 10	2	7	1	1																										
43	Gun Captain, 8"/55	20 00 14	3	7	1	1																										
44	Pointer, 8"/55, NK.16	20 00 14	6	6	4	6																										
45	Trainer, 8"/55, NK.16	20 00 17	1	7	1	1																										
46	Sightsetter, 8"/55, NK.16	20 00 18	5	7	3	1																										
47	Turret Capt., 8"/55	20 00 18	1	3	1	1																										
48	Gun Capt., 8"/55	20 00 20	4	7	1	1																										
49	Pointer, 8"/55	20 00 21	6	7	1	1																										
50	Trainer, 8"/55	20 00 23	3	3	1	1																										
51	Trayman, 8"/55	20 00 23	4	7	1	1																										
52	Hammerman, 8"/55	20 00 24	7	7	1	1																										
53	Sightsetter, 8"/55	20 00 25	4	7	1	1																										
54	Rangefinder Op., 8"/55	20 00 26	1	8	7	8																										
55	Pointer, 6"/47	20 00 26	5	7	1	1																										
56	Trainer, 6"/47	20 00 28	4	7	1	1																										
57	Sightsetter, 6"/47	20 00 31	3	7	1	1																										
58	Projectile Loader, 6"/47	20 00 37	6	7	1	1																										

* Reported as the highest value

Highest Literacy Required
R Reading
W Writing
A Arithmetic

SUMMARY TABLE

Literacy Required for Shipboard Assignment:

Item	Duty Assignment		N	Highest Literacy Required		Frequency of Occurrence at Each Scale Rating *																								Modified Mode Values		
						Reading								Writing								Arithmetic										
						R	W	A	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	R	W	A					
59	Hot Gasman, 16"/47	20 00 30	1	7	1	1																					7	1	1			
60	Gun Capt., 5"/32	20 00 40	18	7	3	3	6																					1,7	1	1,3		
61	Pointer, 5"/32	20 00 40	20	7	1	4	1																					3,7	1	1		
62	Trainer, 5"/32	20 00 40	19	7	1	4																						3,7	1	1		
63	Shellman, 5"/32	20 00 40	20	7	4	3	15																					1,7	1	1,3		
64	Powderman, 5"/32	20 00 40	26	8	1	3	15																					1,7	1	1		
65	Sightsetter, 5"/32	20 00 45	12	7	3	6																						3	1,3	1		
66	Hot Shellman, 5"/32	20 00 40	23	7	1	3	10																					1,7	1	1,3		
67	Fusesetter, 5"/32	20 00 40	9	7	3	3																						3,7	1	1		
68	Mount Captain, 3"/50	20 00 40	4	7	5	6																						7	1	4		
69	Pointer, 3"/50	20 00 50	5	7	1	3																						3,7	1	1		
70	Trainer, 3"/50	20 00 51	3	7	1	1																						7	1	1		
71	First Loader, 3"/50	20 00 50	41	7	3	3	8																					1,7	1	1,3		
72	Second Loader, 3"/50	20 00 50	25	7	1	3	15																					3,7	1	1		
73	Sightsetter, 3"/50	20 00 54	2	7	1	6																						3,7	1	1,5		
74	Local Surface Cor. 3"/50	20 00 55	5	7	1	6																						7	1	1		
75	Local AA Control Cor. 3"/50 RF	20 00 56	4	7	1	2																						7	1	1		
76	Mount Captain, 40mm	20 00 50	9	7	5	5	1																					3,7	1,5	1,3		
77	Pointer, 40mm	20 00 50	22	7	1	3	2																					3,7	1	1		
78	Trainer, 40mm	20 00 50	24	7	1	3	1																					3,7	1	1		
79	Loader, 40mm	20 00 60	132	7	1	5	20																					1,7	1	1,3		
80	Ammo. Passer, 40mm	20 00 61	12	7	1	3	10																					1	1	1		
81	Gunners Talker	20 00 71	16	7	5	3	9																					1,7	1	1		
82	Radial FPI Cor.	20 01 00	1	3	1	1																						3	1	1		
83	Main Battery Cor. Talker	20 01 24	1	3	1	1																						3	1	1		
84	Radial Antenna Man	20 02 00	6	7	7	4																						6	1,7	1		
85	Trainer, Mk. 27, 54 Dir.	20 02 00	6	7	5	6																						3	3	1		
86	Trainer, Mk. 55 Dir.	20 02 04	1	7	1	1																						7	1	1		
87	Pointer, Mk. 24 Dir.	20 02 04	1	7	1	1																						7	1	1		

* Reported as the highest value

Highest Literacy Required

R Reading

W Writing

A Arithmetic

SUMMARY TABLE

Literacy Required for Shipboard Assignments

Item	Duty Assignment		N	Highest Literacy Required		Frequency of Occurrence at Each Scale Rating *																								Modified Mode Values		
						Reading						Writing						Arithmetic														
						Reading						Writing						Arithmetic														
						1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8			
	Title	Code	R	W	A	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	R	W	A								
88	Pointer, MK 37 Dir.	20 02 07	4	8	1	3	1	1																3,8	1	1						
89	Pointer (Leveler), MK 55 Dir.	20 02 10	1	5	5	1				1														5	5	1						
90	Rangefinder Opr., MK 37 Dir.	20 02 13	1	7	1	1						1												7	1	1						
91	Sightsetter	20 02 22	4	3	3	1			4															3	1	1						
92	Radar Opr., MK 34 Dir.	20 02 23	4	7	5	6			2	1			1											2,7	1,5	1,6						
93	Radar Opr., MK 52 Dir.	20 02 25	1	7	1	1							1											7	1	3						
94	Radar Opr., MK 54 Dir.	20 02 26	2	3	1	1			2															3	1	1						
95	Radar Opr., MK 56 DPCS	20 02 27	1	3	3	1			1															3	1	1						
96	Radar Opr., MK 57 DPCS	20 02 28	1	3	1	1			1															3	1	1						
97	Range Setter, MK 51 Dir.	20 02 31	1	3	1	1			1															3	1	1						
98	Director Opr., MK 51 Dir.	20 02 36	6	7	1	1			2	3			1											3	1	1						
99	Director Opr., MK 56 DPCS	20 02 38	2	3	1	1			1	1														3	1	1						
100	Director Opr., MK 57 DPCS	20 02 39	6	3	1	1			1	3	2													3	1	1						
101	Director Opr., MK 63 DPCS	20 02 40	1	7	3	3						1												7	3	3						
102	Director Talker	20 02 45	10	4	1	1			1	1														1	1	1						
103	Radar Room Talker	20 03 00	1	6	1	1						1												6	1	1						
104	Rangekeeper Opr.	20 03 01	2	7	1	1			1				1											3,7	1	1						
105	Computer Range Opr.	20 03 02	2	3	1	1			2															3	1	1,7						
106	Computer Bearing Opr.	20 03 03	2	3	3	6			2															3	3	1,6						
107	Computer (Elevation) Opr.	20 03 04	4	3	3	4			1	3														3	1	1						
108	Stable Element Opr.	20 03 05	2	4	5	6			1	1														4	1,5	1,6						
109	Stable Vertical Opr.	20 03 06	1	3	5	5			1															3	5	5						
110	Star Shell Computer Opr.	20 03 07	1	7	1	1						1												7	1	1						
111	Fire Control Switchboard Opr.	20 03 09	2	4	1	1			2															4	1	1						
112	Telephone Switchboard Opr.	20 03 10	7	6	6	1			1	1	5													6	6	1						
113	Graphic Plotter	20 03 11	2	3	3	3			2															1	3	3						
114	Spot Coordinator	20 03 12	1	3	3	6			1															3	3	6						
115	Plot Lightset Talker	20 03 13	4	3	3	1			3															3	1	1						
116	Naval Gun, Gen'l. Quarters	20 04 01	7	7	3	3			3				4											3,7	1	3						

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Highest Literacy Required
R Reading
W Writing
A Arithmetic

SUMMARY TABLE

Literacy Required for Shipboard Assignments

Item	Duty Assignment		N	Highest Literacy Required		Frequency of Occurrence at Each Scale Rating *																								Modified Mode Values		
						Reading										Writing																
						Arithmetic		Writing		Reading		Arithmetic		Writing		Reading		Arithmetic		Writing		R	W	A								
1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	R	W	A						
117	Handling Room Supervisor	20 04 03 13	13	7	7	5	1	3	1	3	1	3	1	3	1	3	7	1	3	1	3	1	3	1	3	7	1	3				
118	Powder Hoistman	20 04 04 19	19	8	1	3	2	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
119	Shell Hoistman	20 04 05 33	33	7	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
120	Powder Passer	20 04 06 104	104	7	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
121	Shell Passer	20 04 07 37	37	7	3	4	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
122	Projectile Man, 8"/55, Mk 16	20 04 08 7	7	7	1	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
123	Scuttleman	20 04 09 14	14	7	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
124	Handling Room Doorman	20 04 11 1	1	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
125	Magazine Ammo. Passer	20 04 12 17	17	7	7	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
126	Handling Room Ammo. Passer	20 04 13 17	17	7	2	3	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
127	Parbuckler, 16" Turret	20 04 15 3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
128	Rotating Ring Opr., 7"/35, Mk 16	20 04 17 1	1	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
129	Sprinkler Panel Opr., 16" Turret	20 04 18 4	4	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
130	Ammo. Passer, 16" Deck	20 04 19 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
131	Parbuckler, 8"/55, Mk 16	20 04 21 1	1	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
132	Magazine Taker	20 04 22 1	1	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
133	Gunnery Repair, Turrets	20 08 02 4	4	8	7	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
134	Gunnery Repair, Mounts	20 08 03 3	3	8	5	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
135	Gunnery Repair, 16" Mounts	20 08 04 4	4	8	7	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
136	Fire Control Repairman	20 08 06 1	1	6	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
137	Diesel Watch	20 08 08 6	6	7	7	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
138	Control Room Supervisor	20 08 02 4	4	6	7	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
139	Throttleman	20 08 03 18	18	8	7	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
140	Lower Level Pumpman	20 08 07 9	9	4	5	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
141	Upper Level Pumpman	20 08 08 2	2	6	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
142	Feed Pumpman	20 08 10 2	2	6	7	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
143	Condensate Pumpman	20 08 11 5	5	5	5	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
144	Fire Pumpman	20 08 12 1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
145	Deaerating Feed Tankman	20 08 14 1	1	6	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					

* Reported as the highest value

Highest Literacy Required

R Reading

W Writing

A Arithmetic

SUMMARY TABLE

Literacy Required for Shipboard Assignments

Item	Duty Assignment		N	Highest Literacy Required	Frequency of Occurrence at Each Scale Rating *																								Modified Mode Values																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
					Reading								Writing								Arithmetic																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8				R	W	A																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
146	Engine Room Messenger	30 00 15	37	6 7 7				15	12	3	7		1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

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Highest Literacy Required

R Reading
W Writing
A Arithmetic

SUMMARY TABLE

Literacy Required for Shipboard Assignments

Item	Duty Assignment		N	Highest Literacy Required		Frequency of Occurrence at Each Scale Rating *																								Modified Mode Values					
						Reading								Writing								Arithmetic													
						1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8						
	Title	Code		R	W	A																							R	W	A				
175	Boat Engineer	30 03 12	15	7	7	7	1																						3,7	3,7	1,6				
176	IC Shop Man	30 04 08	3	8	7	8																							2	7	3,8				
177	IC Watch	"	1	2	1	1	1																						1	1	1				
178	Electric Shop Man	"	17	8	8	8	3																						6,8	1,7	1,2				
179	Electrical Spaces Watch	"	3	4	1	1	1																						4	1	1				
180	Lighting Repairman	30 04 04	4	6	7	8																							1	5	6	2,8			
181	IC Room Electrician	30 04 04	3	6	7	8	1																						1	1,6	1,7	1,2			
182	IC Electrician	30 04 07	9	8	7	8	1																						2	3,2	1,7	1,2			
183	Cyco Switchboard Opr.	30 04 08	4	8	6	8	1																						1	3,2	1,6	1,2			
184	Battery Shop Electrician	30 04 04	2	8	7	6																								8	7	1,6			
185	Searchlight Electrician	30 04 10	2	6	7	8																								1	6	7	1,2		
186	Electrical Station Talker	30 04 11	4	6	6	1	2																							1,6	1,6	1			
187	Aft Steering Engine Electrician	30 04 13	1	1	1	1	1																							1	1	1	1		
188	Turret Electrician	30 04 14	1	7	1	1																								7	1	1	1		
189	IC ACO Switchboard Electrician	30 04 15	5	6	6	1																								3,6	1,6	1	1		
190	Emergency Switchboard Operator	30 04 17	1	6	6	1																								6	6	1	1		
191	Mount Electrician	30 04 19	2	4	1	1																								4	1	1	1		
192	Engine Room Electrician	30 04 35	1	8	7	6																								8	7	6	6		
193	Radio Repairman	30 05 01	4	8	8	8																								2	2	2	1,2		
194	Radar Repairman	30 05 02	3	8	7	8	1																							2	1,8	3,7	1,2		
195	Fire Control Radar Repairman	30 05 03	3	8	7	8																								1	3,2	1,3	1,8		
196	Teletype Breakdown Man	40 00 08	1	6	7	1																									6	7	1	1	
197	Communication Messenger	40 00 02	5	7	6	2	1																							5	1	1	1		
198	Communication Talker	40 00 03	5	6	6	3	2																							1,6	1,6	1	1		
199	Teletype Operator - (IC)	40 00 04	3	8	7	3																								8	7	3	3		
200	Fleet Broadcaster	40 01 09	1	8	6	2																									9	5	3	3	
201	Radio Central Supervisor	40 01 11	4	8	7	8																								1	1	1	1,8	1,8	
202	Radio Operator	40 01 03	5	8	8	7																								2	2	2	3,7	3,7	
203	Teletype Radio Operator	40 01 04	3	7	6	3																									7	1,6	1,6	3	3

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						Reading								Writing								Arithmetic													
						1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	R	W	A											
	Title	Code		R	W	A	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8													
204	Radio Central Messenger	40 01 05	6	7	5	1				1	4			1	3									5			1								
205	Radio Central Talker	40 01 06	4	6	6	4	2					2			2			1					3			1,6	1,6	1							
206	Call Sign Breakdown Man	40 01 09	1	7	6	4							1						1							7	6	4							
207	Radio Operator, Transmitting Room	40 02 02	5	8	7	8		3				1		2	2				1			2		2	3,8	1,7	1,8								
208	Radio II Talker	40 02 02	7	6	5	1	5								6								7		1	1	1								
209	Radio II Messenger	40 02 04	1	5	1	1						1			1											5	1	1							
210	Flag Plot Communication Talker	40 03 01	1	1	1	1	1								1										1	1	1								
211	Flag Plot Messenger	40 03 02	1	5	1	1						1			1										5	1	1								
212	Emergency Radio Operator	40 04 02	1	3	1	5									1										3	1	5								
213	Emergency Radio Talker	40 04 03	1	1	1	1	1								1										1	1	1								
214	Telephone Switchboard Operator	40 05 08	24	6	6	1		3		2	19				1						2	19		24		6	6	1							
215	Main Battery Control Radio Operator	40 05 02	1	6	6	1							1									1				6	6	1							
216	CIC Net Radio Operator	40 05 07	1	6	6	1																1				6	6	1							
217	Signalman	40 07 03	17	8	8	7	1	1							6	3	6	1			1	1	8	5	1	5	2	7	1	1	1	1	6,8	7	1,3
218	Signal Bridge Messenger	40 07 04	2	6	6	1				1					1							1				2		6	1,6	1					
219	Signal Bridge Talker	40 07 05	11	7	6	1	7								3	1	7					4			11		1,6	1,6	1						
220	Post Office Clerk	40 08 02	1	7	7	6									1							1						7	7	6					
221	CIC Repairman	45 00 08	2	6	7	1									1																				
222	Surface Search Radar Operator	45 00 01	6	7	8	8		1	2	1					1	1	2				1		1	1	3	1	1	3,7	1,8	1,8					
223	Air Search Radar Operator	45 00 02	5	7	7	8		1	3						1	3					1		1	1	2	2	1	3,7	1,7	1,8					
224	Altitude Determining Radar Operator	45 00 03	4	7	7	8			3						1	3						1		3			1	3,7	1,7	1,8					
225	VF Radar Operator	45 00 04	6	7	7	8	1	2	2						1	4	1					1		1	3	2	3	3	1	1	2				
226	WJ Radar Operator	45 00 05	7	7	7	8		1	5						1	4	2					1		1	5	1	3	1,3	1,3	1					
227	Radar Countermeasure Operator	45 00 06	2	8	7	8		1							1	1	1					2		1			1	3,8	1,7	1,8					
228	Radar Switchboard Operator	45 00 09	2	5	1	1						2			2										2			5	1	1					
229	Geographic (DRT) Plotter	45 00 10	4	7	7	8		2													2		1	1				2,7	2,7	2,7	2				
230	Intercept Plotter	45 00 11	2	7	7	8		1													1							3,7	3,7	3,7	2				
231	DR Plotter	45 00 12	2	7	7	8									2		1											7	1,7	1,7	2				
232	Surface Plotter	45 00 13	4	7	7	8		2							1						2		1					3,7	3,7	3,7	1				

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Highest Literacy Required

R Reading

W Writing

A Arithmetic

SUBBARY TABLE

Literacy Required for Shipboard Assignments

Item	Duty Assignment		N	Highest Literacy Required		Frequency of Occurrence at Each Scale Rating*																								Modified Mode Values		
						Reading								Writing								Arithmetic										
						1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	R	W	A
233	Visual Air Control Plotter	45 00 14	2	7	7	2																										
234	Air Summary Plotter	45 00 15	9	8	7	2																										
235	Surface Summary Plotter	45 00 16	3	7	7	3																										
236	Geographic (DPT) Recorder	45 00 17	2	8	7	2																										
237	DR Recorder	45 00 18	1	7	7	2																										
238	Air Plot Recorder	45 00 19	4	7	7	2																										
239	Radio Recorder Operator	45 00 20	1	7	7	2																										
240	CIC Talker	45 00 22	21	7	7	2																										
241	CIC Status Board Keeper	45 00 23	4	7	7	2																										
242	DC Central Watch	50 00 02	2	5	1	1																										
243	Casualty Board Operator	50 00 01	2	6	6	1																										
244	Oil King	50 00 03	5	7	7	2																										
245	DC Central Messenger	50 00 04	21	6	7	1																										
246	DC Central Talker	50 00 05	12	8	7	6																										
247	Magazine Sprinkler Control Operator	50 00 07	2	3	1	1																										
248	Repair Party Supervisor	50 01 01	3	6	7	2																										
249	Repair Party Man, General Assistant	50 01 02	55	7	7	5																										
250	Repair Party Man, Shoring	50 01 03	8	6	6	7																										
251	Repair Party Man, Patching & Fluting	50 01 04	9	6	7	2																										
252	Repair Party Man, Shallow Water Ditching	50 01 05	1	1	1	1																										
253	Repair Party Man, Raising	50 01 06	1	1	1	1																										
254	Repair Party Man, Casualty Power	50 01 07	17	8	7	2																										
255	Repair Party Man, Cutting and Welding	50 01 08	7	8	6	1																										
256	Repair Party Man, Pipe Fitter	50 01 09	1	8	3	6																										
257	Engineering Casualty Repairman	50 01 11	3	6	7	6																										
258	Engine Room Casualty Repairman	50 01 12	1	1	1	1																										
259	Fuel Oil Valve Control Operator	50 01 13	1	3	1	6																										
260	Repair Party Man, Soundings	50 01 14	4	6	7	6																										
261	Steam Heat System Repairman	50 01 15	1	5	5	1																										

* Reported as the highest value

Highest Literacy Required
R Reading
W Writing
A Arithmetic

SUMMARY TABLE

Literacy Required for Shipboard Assignments

Item	Duty Assignment		N	Highest Literacy Required	Frequency of Occurrence at Each Scale Rating*																Modified Mode Values						
					Reading								Writing														
					1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8				R	W	A	
262	Refrigeration Equipment Repairman	50 01 16	1	6 5 1						1														6	5	1	
263	Repair Party Talker	50 01 13	49	7 7 1	22								23												1,6	1,6	1
264	Watertight Integrity Man	50 01 31	5	8 5 3			4						1 4												3	1	1
265	Gear Locker Issue Man	50 01 33	11	7 7 5	1								2												6	5,7	1,1
266	Fire Historian	50 03 90	3	4 6 1																					6	6	1
267	Portable Blower Man	"	1	3 1 1			1						1												3	1	1
268	Sprinkler Man (Fire Party)	"	5	4 1 1			5						5												3	1	1
269	Fire Party Supervisor	50 01 01	3	5 1 1	1		1						3												5	1	1
270	Hoseman	50 03 02	139	3 1 1	25		44						139												1,3	1	1
271	Nozzle Man	50 03 03	40	3 2 1	24		11						40												1,3	1	1
272	Flugman	50 03 04	104	3 1 1	78		31						104												1,3	1	1
273	Axeman	50 03 05	2	3 1 1	1		1						2												3	1	2
274	Foam Generator Operator	50 03 06	3	3 1 1	2		1						3												3	1	1
275	Foam Generator Supplyman	50 03 07	17	3 1 1	16		1						17												1	1	1
276	Portable CO ₂ Man	50 03 08	39	7 3 1	23		14						39												1,3	1	2
277	CO ₂ Man	50 03 09	27	8 1 1	13		12						27												1,3	1	1
278	CO ₂ Line Tender	50 03 10	12	4 1 2	7		4						12												1,3	1	1
279	Asbestos Suit Man	50 03 11	6	3 1 1	5		1						6												1	1	1
280	Hardy Billy Operator	50 03 13	11	7 1 1	8		1						11												1	1	1
281	Accessman	50 03 14	5	3 1 1	2		3						5												3	1	1
282	Fire Party Messenger	50 03 16	2	1 1 1	2								2												1	1	1
283	Fire Party Talker	50 03 17	16	7 7 1	9								16												1,6	1,7	1
284	Fire and Flushing Pump Man	50 03 25	1	3 1 1			1						1												3	1	1
285	Radiological Defense Monitor	50 04 01	3	7 5 1																					7	5	1
286	Detection Instrument Recorder	50 04 02	1	3 3 1			1																		3	3	1
287	Radiological Decontamination Man	50 04 03	2	6 6 1			1																		6	6	1
288	Hatch Man	73 00 00	3	3 1 1			3						3												3	1	1
289	Air Foam Provider	74 00 00	1	1 1 1	1								1												1	1	1
290		"	1	1 1 1	1								1												1	1	1

* Reported as the highest value

Highest Literacy Required

R Reading

W Writing

A Arithmetic

SUMMARY TABLE

Literacy Required for Shipboard Assignments

Item	Duty Assignment		N	Highest Literacy Required		Frequency of Occurrence at Each Scale Rating *																								Modified Mode Values								
						Reading										Writing										Arithmetic												
						R	W	A	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5				6	7	8	R	W	A
291	Helmet Man	"	2	1	1	1	2																															
292	Rescue Party Man	"	3	1	1	1	3																															
293	Tool Man	"	2	1	1	1	2																															
294	Boat Signalman	74 00 01	3	6	6	1																																
295	Diver Tender (diver line tender)	74 00 02	1	1	1	2	1																															
296	Torch Man	74 00 10	1	1	1	1	1																															
297	Scaling Ladder Man	74 00 14	2	1	1	1	2																															
298	Jacob's Ladder Bigger	74 00 15	1	1	1	1	1																															
299	Life Raft Man	"	12	1	1	1	13																															
300	Life Jacket Man	74 00 20	20	3	1	3	35	1																														
301	DRT Hatch	76 00 08	2	5	5	7																																
302	Line Handler	"	1	1	1	1	1																															
303	Lookout	"	1	6	6	2																																
304	Net Handler	"	2	1	1	1	2																															
305	Signalman	"	2	6	6	2																																
306	Life Boat Man	"	7	1	1	1	7																															
307	Stern Hook	76 00 03	1	5	5	3																																
308	Boat Winch Opr.	76 00 13	1	1	1	1	1																															
309	Life Ring Man	76 00 15	30	7	1	1	30																															
310	Rescue Swimmer	77 00 03	3	1	1	1	1																															
311	Cargo Net Handler	77 00 04	2	1	1	1	2																															
312	Boat Coxswain	79 01 01	22	3	7	7	4																															
313	Box Hook	79 01 03	32	4	4	1	30																															
314	Bridge Lookout	85 00 01	2	1	1	6	2																															
315	Devil Winch Opr.	85 02 03	1	1	1	1	1																															
316	Paint Locker Keeper	90 00 01	1	4	7	5																																
317	Deck Sentry (Combined)	90 01 04	34	7	7	6	20	2	33	20	6	3																										
318	Admiral's Passageway Watch	"	1	6	1	1																																
319	Aft Bow Sentry	"	1	1	1	1	1																															

* Reported as the highest value

Highest Literacy Required
R Reading
W Writing
A Arithmetic

SUMMARY TABLE

Literacy Required for Shipboard Assignments

Item	Duty Assignment	N	Highest Literacy Required	Frequency of Occurrence at Each Scale Rating *																												Modified Value																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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				R	H	A	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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* Reported as the highest value

Highest Literacy Required

H Reading

W Writing

A Arithmetic

SUMMARY TABLE

Literacy Required for Shipboard Assignments

Item	Duty Assignment		N	Highest Literacy Required		Frequency of Occurrence at Each Scale Rating *																												Modified Mode Values	
						Reading										Writing										Arithmetic									
						1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	R	W	A			
	Title	Code		R	W	A	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8					
349	OOD Messenger	"	55	8	7	7	11		4	2	16	21	1	25				2	7	20	1		35	2	18	1			1		6	1,6	1,3		
350	OOD Messenger	"	130	6	7	6	11		3	2	54	60		34			2	2	11	75	6		101	3	25						6	2,6	1,3		
351	Div. Living Compartment Sec. Patrol	90 01 16	19	6	4	1	8		3	5	2	1		12				7					19								1,4	2,4	1		
352	Duty Division Petty Officer	90 01 21	2	6	7	3					1	1						1			1			1	1					6	7	3			
353	Duty Cook	90 04 03	1	7	3	6							1				1														7	3	6		
354	Duty Boilerman	90 05 12	6	3	1	3	2		4							6							5	1							3	1	1		
355	Duty Motion Picture Opr.	90 05 17	3	8	8	7				1	1			1				2					1	1	1						2	8	3,7		
356	Engine Room Security Watch	90 05 18	11	6	7	7	4		3			4			7			1		3			8			2	1				3,6	1,7	1,6		
357	Log Room Messenger	90 05 27	4	5	5	1			2	1	1				2				2				4								4	1,5	1		
358	Engine Room Auxiliary Watch	90 05 28	4	3	5	1		1	3						1			2		1			4								3	3	1		

* Reported as the highest value

Highest Literacy Required
R Reading
W Writing
A Arithmetic

Section 3: Assignments for Which Codes
Are Not Yet Available

SUMMARY TABLE

Literacy Required for Shipboard Assignments

Item	Duty Assignment		N	Highest Literacy Required		Frequency of Occurrence at Each Scale Rating *																								Modified Mode Values		
						Reading										Writing										Arithmetic						
						Title		Code		R	W	A	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	R	W	A	
1	Addis Lamp Man			1	1	1	1																		1	1	1					
2	Aerofoam Opr.			2	3	1	1																		3	2	1					
3	Aft Steering			3	3	4	3								1										2	1	1					
4	Armory Watch			4	3	3	3								1										2	1	1					
5	Assistant Patrol Duty			5	3	3	3								1										5	5	3					
6	Athletic Gear Locker Keeper			6	3	4	7	1	1																3	4	17					
7	Auxiliary Steam Watch			7	7	7	6								1										7	7	6					
8	Auxiliary Watch (Top Side)			8	3	7	1								1										3	1	1					
9	Battery Patrol			9	3	3	1																		6	5	1					
10	Beach Guard Radio Opr.			10	3	7	4																		7	7	1					
11	Beach Messenger			11	3	4	1																		4	1	1					
12	Boat Shop Man			12	3	7	7									1									3	7	7					
13	Boat Keeper			13	1	6	7	3							1										6	7	3					
14	Boat Patrol			14	1	4	4	1							1										4	4	1					
15	Boatwinch Man			15	1	1	1	1								1									1	1	1					
16	Coffee Watch			16	10	6	5	3	7	1	1				1										1	1	1					
17	Captain's Orderly			17	1	4	4	1																	6	6	1					
18	Cold Iron Watch			18	24	5	5	1	1						1										1,3	1	1					
19	Collision Repair Electrician			19	1	6	6	3																	6	6	3					
20	Collision Watch			20	3	7	7	7																	7	1,7	1,7					
21	Compartment Cleaner (Supvr.)			21	1	4	5	3																	4	5	3					
22	D. C. Patrol			22	24	7	7	1							3	1									4,6	5	1					
23	Duty Armor Watch			23	1	5	5	1							1										5	5	1					
24	Engine Room Messenger			24	2	3	3	3																	3	3	3					
25	Executive's Orderly			25	3	6	1	1	2						2	3	1								1,5	1	1					
26	Fire Locker Keeper			26	1	1	1	1	1																1	1	1					
27	Fire Marshall (Division)			27	1	3	7	3									1								3	7	3					
28	Gyro Compass Watch			28	2	4	7	4							1										6	3,7	6					
29	Hydraulic Board Opr.			29	1	3	1	1									1								3	1	1					

* Reported as the highest value

Highest Literacy Required

R Reading

W Writing

A Arithmetic

Literacy Required for Shipboard Assignments

Highest Literacy Required
R Reading
W Writing
A Arithmetic

* Reported as the highest value

SUMMARY TABLE

Literacy Required for Shipboard Assignments

Item	Duty Assignment	Code	N	Highest Literacy Required		Frequency of Occurrence at Each Scale Rating *																								Modified Mode Values		
						Reading										Writing																
						1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	R	W	A
59	Foreward & Aft Patrol		1	3	1	1																						3	1	1		
60	Security Boat Engineer		1	4	1	1																						4	1	1		
61	Security Operations Man		1	4	5	1																						4	5	1		
62	Security Switchboard Op.		1	1	1	1																						1	1	1		
63	Shocking Kit Man		1	1	1	1																						2	1	1		
64	Side Boy		64	1	1	1	64																					1	1	1		
65	Sprinkler System		22	3	1	1	1	4																				1,3	1	1		
66	Sprinkler Op. 10 MM Gun		6	4	1	1	4	1	1																			1,4	1	1		
67	Starboard Hoist Man		1	5	1	1																						5	1	1		
68	Starboard Light Op.		1	5	1	1																						5	1	1		
69	Steam Heat Watch		1	5	6	7																						6	6	7		
70	Steering Watch		3	3	1	1																						3	1	1		
71	Steering Watch		1	3	3	3																						3	3	3		
72	Steering Control Switched Watch		1	2	1	1																						2	1	1		
73	Supervisor of Watch (Shore Bldg.)		1	1	1	1																						1	1	1		
74	Vehicle Repairman		1	3	7	1																						3	7	1		

* Reported as the highest value

Highest Literacy Required
R Reading
W Writing
A Arithmetic

APPENDIX B
REVISED SCALE

READING

<u>Step No.</u>	<u>Description</u>	<u>Example</u>
1.	No reading is needed on duty.	<ul style="list-style-type: none"> a. Loading material by verbal instruction. b. Cleaning bright work. c. Painting bulkheads.
2.	Symbols that are neither alphabetical nor numerical.	<ul style="list-style-type: none"> a. Discriminates by shape, color, size, or distance. b. Checks water or oil level against markers.
3.	Reads numbers, letters, or combinations of both.	<ul style="list-style-type: none"> a. Reads a temperature gauge. b. Reads a compass. c. Reads switches marked by letters. d. Sorts laundry by numbers.
4.	Reads commonly understood words or names.	<ul style="list-style-type: none"> a. Reads own name or watch list. b. Reads switches labeled, e.g., start, stop, slow. c. Reads words such as officer's country, danger, explosive. d. Reads labels, e.g., flour, salt, beans, etc. e. Menus.
5.	Reads less commonly appearing words or names.	<ul style="list-style-type: none"> a. Reads names on I.D. cards while on O.D. messenger watch. b. Inventory check-lists, such as electronic parts and machine parts.
6.	Reads short phrases and simple sentences.	<ul style="list-style-type: none"> a. Reads phone messages, "Report to Section B64 at 0800." b. Reads log entries such as, "Call the following men at 0600" while on O.D. messenger watch.
7.	Reads simple paragraphs.	<ul style="list-style-type: none"> a. Reads recipes such as corn bread. b. Reads safety instructions for 40 mm. mount. c. Yeoman reads transfer orders.
8.	Any higher level of reading.	<ul style="list-style-type: none"> a. Reads blueprints or radio diagrams. b. Reads technical operating manuals.

WRITING

Step No.	Description	Example
1.	No writing is needed on duty.	
2.	Symbols that are neither alphabetical nor numerical.	a. Makes check marks on check-list.
3.	Writes single letters of the alphabet, single digits, or initials.	a. Writes letters and numbers of incoming ships in log. b. Numerals on laundry. c. Serial number.
4.	Writes own name.	a. Signs watch list.
5.	Writes words and commonly understood phrases or names.	a. Writes "all secure," "liberty party," "leave," "port," "starboard." b. Address - 1776 Independence Ave., Brooklyn, N.Y. c. Enters name of passing ship in the log.
6.	Copies simple sentences and/or simple paragraphs.	a. Writes down simple telephone messages, "Tell C.P.O. to call O.D. at 0800." b. Makes log entries from verbal reports, "Changed course to _____ degrees at 0800." c. Copies doctor's notes into ward log.
7.	Writes original simple sentences and/or short paragraphs.	a. Fills out detailed accident report. b. Yeoman composes summary report from memos and chits. c. Composes or edits messages for bulletin board or P.A. system.
8.	Any higher level of writing.	a. Originates detailed technical work reports. b. Journalistic writing for shipboard publications.

ARITHMETIC

Step No.	Description	Example
1.	No arithmetic is needed for duty.	
2.	Counts up to 20.	a. Counts pieces of laundry, prisoners in the brig, or bells for operating an engine.
3.	Counts over 20.	a. Counts number of men in liberty boat, pieces of silverware, parts or supplies for inventory.
4.	Adds three or four single digit numbers, or subtracts single digit numbers.	a. Collects and totals linen in wardroom, e.g., $5 + 4 + 9 = 18$. b. $6 - 4 = 2$.
5.	Performs simple multiplication and division of single digit numbers.	a. Doubles the amount of ingredients called for in a recipe. b. Finds half the amount of ingredients called for.
6.	Adds columns of multiple digit numbers or subtracts multiple digit numbers.	a. Totals supplies used in certain period, e.g., $25 + 145 + 36 = 206$. b. Computes mileage traveled in jeep, e.g., $35,450 - 35,210 = 240$.
7.	Performs multiplication and division of multiple digit numbers.	a. Computes area of a bulkhead to be painted, e.g., $10 \text{ ft.} \times 20 \text{ ft.} = 200 \text{ sq. ft.}$ b. Determines rates of fuel consumption, e.g., $\frac{280 \text{ miles}}{14 \text{ gals.}} = 20 \text{ miles/gallon.}$
8.	Any higher form of arithmetic.	a. Using logarithms for rapid calculations. b. Computing alternating current circuit formula.

APPENDIX C
INITIAL SCALE

1. NO reading, writing, or arithmetic is needed on the job.

Examples: a. Loading and unloading materials.
b. Painting, chipping, and sanding.
c. Cleaning.
d. Starting and stopping a machine.

2. Job requires "reading" markers, indicators, or signs by color differences, height differences, shape differences, or distance differences. May orally relay this information but not responsible for appropriate action.

Examples: a. Reads road signs by shape or color.
b. Checks whether dial indicator is on red or green.
c. Checks level of water or oil, whether it is below or above a designated mark.

3. Same as 2, but takes appropriate action by doing something.

Examples: a. Opens valve until two marks match.
b. Fills oil pan up to designated level marked by line.
c. Saws wood or metal where mark was made.

4. Reads numbers and/or letters in the alphabet and/or words on controls, machines, or switches.

Examples: a. Reads any gauge.
b. Reads switches such as slow, medium, fast, marked "S," "M," "F."
c. Sorts laundry by number markings.

5. Reads simple single words.

Examples: a. Reads signs with single words, such as left, right, starboard, hot, cold.
b. Reads labels, especially of foods, such as flour, salt, sugar.
c. Visual inspection of logs.

6. Writes single words or numbers or names (including own signature) and/or counts up to 20.

Examples: a. Writes dates.
b. Reads and writes rank designations.
c. Records weights.
d. Records numbers or words in log.

7. Writes only by copying material, or reads sentences rather than words, as in reading simple and brief written instructions, OR performs simple arithmetic.

Examples: a. Adds short columns of figures.
b. Reads packing instructions.
c. Reads menu.

8. Any higher form of reading, writing, and arithmetic.

Examples: a. Reads instructions in manuals and/or blueprints.
b. Balances receipts with sales and/or handles cash transactions.
c. Records sentences or computations in log.

APPENDIX D
ROSTER SCHEDULE

ROSTER SCHEDULE

Interview
Date 11/13/52

Ship or
Station USS Pittsburgh (CA-72)

Liaison
Officer

#1

Interv. Sched.	Name	Rate	NEC	Last Grade of School Attended	Test Score
0800	Doe, John J.	SN	1029-23	9th	33
0800	Johnson, James E.	SN	3109-64	12th	39
0800	Smith, Lloyd V.	SN	0032-23	12th	59
0800	Williams, George L.	SN	0032-23	12th	36
0830					
0830					
0830					

#2

0800					
0800					
0800					
0800					
0830					
0830					
0830					

#3

0800					
0800					
0800					
0800					
0830					
0830					
0830					

APPENDIX E
MANUAL FOR CONDUCTING INTERVIEWS

Interview Procedure

Begin each interview by stating, "We are studying billets to learn the amounts of reading, writing and arithmetic necessary. We are not trying to find out how much reading, writing or arithmetic you can do, but only the amounts which you have to use in order to do your job. The results of this interview will not affect you or your rate, but will help the Navy determine how much reading, writing and arithmetic different duties require.

"Before asking questions about your duties I must ask for some other information for research purposes."

(Using the Rating Cards, fill in the information.)

<u>Name</u>	Enter name of person interviewed.
<u>Rate</u>	Enter Navy rate (SN, FN, HA, etc.)
<u>H.E.A.</u>	Enter highest educational attainment.
<u>Ship or Station</u>	Enter name of ship or station to which interviewee is currently assigned.
<u>NEC</u> (Man)	Enter title of billet as obtained from interviewee.
(Official)	Enter title of billet as it appears on interview schedule of ship's roster.
<u>H.S.V.</u>	(Highest Scale Values.) To be filled in last.
<u>T.S.</u>	Enter man's GCT score.
<u>T.N.A.</u>	Leave blank.
<u>RBH Code</u>	Leave blank.

Principal Duty or Occupation

"Now let's think about what you do on your job, the day-to-day things you do when you are working. By what name is your regular duty called?"

(Enter title of regular job under "Principal Duty or Occupation" in space provided to left of R, W, A. In adjoining space write the Navy code number assigned to the principal duty. Secure code number from Executive Officers.)

"How long have you been assigned to your regular job?"

(Enter under "Remarks.")

A "If you are ever required to do any counting or any arithmetic on your job as a (job title), tell me what you might have to do."

(Enter arithmetic requirements, if any, noting the methods used to solve the problem and assign the highest scale value applicable to the arithmetic requirements. See "Use of Scale.")

W "If you are ever required to do any writing on your job as a (job title), tell me what you write."

(Enter writing requirements, if any, and record the highest scale value applicable to the writing requirements. See "Use of Scale." Be sure that any arithmetic which the man must do is also considered as a possible writing requirement.)

R "If you are ever required to do any reading on your job as a (job title), tell me what you read."

(Enter reading requirements, if any, and assign the highest scale value applicable to reading requirements. See "Use of Scale." Be sure that any arithmetic and any writing which the man may be required to do is also considered as a possible reading requirement.)

Repeat the setups (R, W, A) described for "Principal Duty or Occupation" for each of the following, being sure to obtain and enter information about all the tasks which may be required during any of these duties or watches:

Condition Watches (G.Q., etc.)
At Sea - Special Bills
In Port Watches
Emergency and Miscellaneous

If any of the duties are the same as "Principal" or other duty, record that they are the same. The description of a duty should specify (1) the activity, and (2) what is involved. (Tell how complex in terms of scale levels.)

Example: Reads gauges - common words.
Writes in log - names, time.
Inventory - counts 100's.

Use of Scale

In assigning ratings to the various requirements of a duty, please use the following scales. (The scales are presented in Appendix C.)

The interviewee's responses may immediately suggest a scale rating. If the rating suggested is less than an "8" continue to question until you are satisfied that the information you have concerns those tasks warranting the highest possible rating. In other words, determine that task which requires the highest level of reading, writing, and arithmetic performed on each of the duties mentioned.

If the interviewee does not respond with adequate information upon which to assign a rating, determine the rating as follows: Read down the list of examples in the Rating Scale, starting at scale value "8." Say, "If you do things like these, tell me what you do." This will indicate where to probe for any required usage of reading, writing, or arithmetic.

Before assigning a scale rating to a task, ask for an example of what is actually done. Compare the task with the examples on the scale, descriptive of that level, to insure that the task is of a comparable level of difficulty.

Scale values should be determined and entered on the Rating Card for each duty as soon as enough information is obtained. The duty code number should be determined and recorded for each assignment before proceeding to the next.

When all duties and watches have been described and rated, select the Highest Scale Values (H.S.V.) assigned for Reading, Writing, and Arithmetic requirements. Copy these into the summary section on the face of the card: R (), W (), A (). Under "Reasons:" copy the brief descriptions of those tasks for which the Highest Scale Values were assigned.

H.S.V.

Name _____ Rate _____

H.E.A. _____ T.S. _____ T.N.A. _____

Ship or Station _____ RBH Code _____

N.J.C. Title (Man) _____

(Official) _____

Highest Scale Values	Reasons: (R) Read., (W) Writing, (A) Arith.
R ()	
W ()	
A ()	

Rater _____ Date _____

Remarks:

Length of time on job. _____

Note: The following nomenclature has been changed since the field trip was completed:

Navy Job Classification (NJC) to Navy Enlisted Code (NEC)
Enlisted Station Code (ESC) includes the various watch and
quarter assignments.

PRINCIPAL DUTY OR OCCUPATION

		R	
		W	
		A	

OTHER DUTIES & WATCHES

[illegible]

APPENDIX F
INTERVIEWING AID

READING

WRITING

ARITHMETIC

1. No reading is needed on duty.
(Loads ammunition by verbal instruction.)
 2. Reads symbols that are neither alphabetical nor numerical.
(Discriminates between colors or marks.)
 3. Reads numbers, letters, or combinations of both. (Thermometer, compass, laundry marks.)
 4. Reads commonly understood words or names. (Own name, flour, menus.)
 5. Reads less commonly appearing words or names. (I.D. cards, electronic parts list.)
 6. Reads short phrases and simple sentences. (Telephone messages, log entries.)
 7. Reads simple paragraphs (safety instructions, recipes).
 8. Any higher level of reading (blueprints, technical manuals).
1. No writing is needed on duty.
 2. Writes symbols that are neither alphabetical nor numerical (check marks.)
 3. Writes letters of the alphabet, single numbers, or own initials, ship designation, serial numbers, chits.
 4. Writes own name (pay chit, watch list).
 5. Writes words and commonly understood phrases or names. ("All secure," "starboard," addresses, ships' names.)
 6. Copies (verbatim) simple sentences and/or simple paragraphs. (Phone messages, log reports, prescriptions.)
 7. Writes original simple sentences and/or paragraphs. (Accident reports, edits messages.)
 8. Any higher level of writing (technical reports, journalistic writing).
1. No arithmetic is needed for duty.
 2. Counts up to 20 (laundry, prisoners, bells).
 3. Counts over 20 (men in boat, silverware, parts).
 4. Adds three or four single digit numbers or subtracts single digit numbers. (Pieces of laundry: 5 shirts + 4 shorts + 9 socks = 18; 6 forks - 4 forks = 2 forks.)
 5. Performs simple multiplication and division of single digit numbers. $(2 \times 3 \text{ qts.} = 6 \text{ qts.}; \frac{10 \text{ gals.}}{2} = 5 \text{ gals.})$
 6. Adds columns of multiple digit numbers or subtracts multiple digit numbers. $(25 + 145 + 36 = 206; 35,450 \text{ mi.} - 35,210 \text{ mi.} = 240 \text{ mi.})$
 7. Performs multiplication and division of multiple digit numbers. $(10 \text{ ft.} \times 20 \text{ ft.} = 200 \text{ sq. ft.})$
 8. Any higher form of arithmetic (logs, AC circuit, formulas).

Armed Services Technical Information Agency

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AD

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